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RESEARCH ARTICLE

A STUDY ON CHRONIC OTITIS MEDIA ACTIVE MUCOSAL TYPE WITH SINUSITIS AS FOCAL SEPSIS.

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Chronic otitis media active mucosal disease,sinusitis, functional endoscopic sinus surgery.

Abstract

Aim: To establish the role of Sinusitis as Focal Sepsis in Chronic Otitis media active mucosal disease, to emphasize the need of proper diagnostic endoscopic evaluation and improvement in middle ear mucosal disease status after functional endoscopic sinus surgery.
Methods: 60 Patients in the age groups of 18-49 years Chronic Otitis media active mucosal disease were identified and screened for evidence of Focal Sepsis in Paranasal sinus by Diagnostic Nasal endoscopy and computed tomography of paranasal diseases. Then Functional endoscopic sinus surgery was done to clear sinusitis and middle ear mucosal disease status assessed.
Results: Evaluation revealed that sinusitis in these patients was the cause for persistent discharge. All patients had one or more evidence of sinusitis like pus in middle meatus, deviated nasal septum turbinoseptal deformities, prominent enlarged bullae, enlarged middle turbinate on DNE and CT. The otoendoscopy showed inflamed and boggy middle ear mucosal status. All patients underwent septoplasty/FESS depending on findings.Out of 60 patients 52 patient had improvement in middle ear mucosal status with surgery.
Conclusion: In the adult population sinusitis is the most important focal sepsis in case of persistent ear discharge in Chronic Otitis Media active mucosal type of disease. A proper diagnostic nasal evaluation of all Chronic Otitis Media active mucosal type of patients is necessary in comprehensive management of the disease.The clearance of sinusitis has improved the middle ear mucosal status. . Unilateral ear discharge is associated with sinusitis only on the corresponding side, which is in concurrence with our study. Functional endoscopic sinus surgery has emerged as the best procedure for clearance of sinusitis.

Introduction:-

In our study we study and analyse the chronic otitis media of active mucosal disease (CSOM-safe type-tubotympanic) only. The other types of chronic otitis media (COM) namely chronic otitis media active squamous, COM-inactive mucosal, inactive squamous and healed otitis media (the unsafe-attico antral, posterosuperior retraction pocket and marginal perforation) are not analyzed. Chronic otitis media active mucosal type is a longstanding infection of a part or whole of mucoperiosteal lining of middle ear cleft characterized by ear discharge

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and a permanent perforation. A perforation becomes permanent when its margins are covered by squamous epithelium and does not heal spontaneously.

Of various etiology for chronic otitis media active mucosal disease like chronic sinusitis,adenoiditis,tonsillitis,allergic rhinitis, sinusitis acts as a focal sepsis in development of chronic otitis media mucosal type in majority of cases and such an interrelationship is supported by clinical experience and various literature.

Chronic otitis media active mucosal disease patients with coexisting active sinusitis have a chronically persistent ear discharge. Without correcting the sinusitis the management of ear including surgery has frequently led to failures and poor prognosis.

This study correlates that sinusitis is the main and most significant etiological factor for middle ear disease of COM-active mucosal type and that treating sinusitis by FESS in these patients results in the good outcome of disease clearance.

Aims Of The Study

1. To establish the role of sinusitis as focal sepsis in chronic otitis media active mucosal disease.
2. To analyze the improvement in middle ear mucosal disease status following the treatment of sinusitis by doing functional endoscopic sinus surgery.

Methodology:-

1. Design of The Study : Prospective Study
2. Period of Study : April 2010 To March 2012
3. Ethical Clearance : Obtained (Ref : Lr.No.3944/Audit/E1/09 Dt. 30.11.2010
4. An interview is conducted using a questionnaire.
5. A thorough examination of the patient is done.

Materil And Techiques:-

The study population conisists of chronic otitis media active mucosal disease (tubotymapanic type of C.S.O.M) patients who attended the E.N.T. OPD at KMCH and GRG , Chennai during the 2 years period.

Patients with chronic otitis active mucosal disease (tubotympanic type of CSOM and fulfilling our inclusion criteria were randomly selected from patient attending E.N.T OPD. Ear discharged of the patient was sent f9or culture and sensitivity. The patients were treated witch culture directed oral as well as topical and followed up for a period of one month. X-ray of the both mastioids were taken.

Then the patients selected were subjected to DIAGNISTIC NASAL ENDOSCOPY.patients with evidence of sinusitis were treated with antibiotics , antihistamines, mucolytirs and decongestant and other supportive medicines for a period of six weeks. Though they had a symptomatic improvement the had a frequent relaps of symptoms. They were again evaluated with DNE and COMPUTED TOMOGRAPHY OF PARANASAL SINUSES. Then they underwent functional endoscopic sinus surgery and were followed up post operatively every 2 weeks for a period of 3 months. The patients were assessed every 2 weeks by otoendoscopy for cessation of discharge and improvement in middle ear mucosal status The whole information is compiled,statistical analysis done.

Inclusion Criteria

Age : 18-49 years
Sex : Both sex selected

Chronic otitis media active mucosal disease (Tubotympanic type of C.S.O.M.) patients with persistent ear dischare even following culture directed topical and systemic antibiotics

Duration of ear discharge : 3 months and more
Hearing loss : 25-40 db hearing loss

Exclusion Criteria

Chronic otitis media active squamous, inactive mucosal, inactive squamous, adhesive otitis media patients

1. Recurrent chronic otitis media patients after ear surgery
2. Fungal infection of external ear
3. Hearing loss more than 40 db
4. Patients with adenoid hypertrophy, mass in nose and paranasal sinuses and polyposis of sinuses

About 60 patients who met the above criteria were selected for the study. All these patients underwent diagnostic nasal endoscopy, Otoendoscopy and CT paranasal sinuses.

Discussion And Observations:-

The upper respiratory tract including nose, Eustachian tube, paranasal sinuses are lined by pseudostratified ciliated columnar epithelium,basal cells and goblet cells.

In case of chronic inflammation, there is an increase in size and number of goblet cells. The mucus secreted by the paranasal sinuses are cleared by motility of the cilia, which are 50 to 200 per cell and they beat at the rate of 700 to 800 beats per minute moving at the rate of 1 cm per minute.

In patients with sinusitis, the etiology being the anatomical variants leading to stasis of secretions, allergy, viral, bacterial, fungal infections there is alterations in the quality and quantity of the secretions. In some patients, the cause for sinusitis being genetic and congenital defect in mucociliary clearance like Kartageners syndrome, cystic fibrosis, primary ciliary dyskinesia, and also acquired mucociliary dysfunction due to smoking, pollution, medication and surgery.

The normal mucociliary clearance in which the anterior group of sinuses like frontal, maxillary and anterior ethmoidal sinuses drain along the anterior inferior part of pharyngeal end of Eustachian tube. The posterior group of sinuses including the posterior ethmoid and sphenoid sinuses drain posterior and superior to Eustachian tube.

In sinusitis, the quality and quantity of mucous is altered to either purulent or mucopurulent. This leads to alteration in the mucosa lining the pharyngeal end of Eustachian tube with edema, inflammation of subepithelial lymphoreticular network leading to block and obstruction of Eustachian tube and this leads to reduced ventilation and changes in mucosal lining of middle ear cleft. This leads to hypertrophy and increase in number of goblet cells in middle ear cleft. Hence ,sinusitis causes inflammation of the middle ear mucosa with increased and persistent mucoid/mucopurulent discharged and remains as a active mucosal disease.

A prospective study by Aditya M Yeolekar And K S Sengupta at Department of ENT, Indira Gandhi medical college, Nagpur,India,was conducted wherin distribution of sinonasal disease was studied in all 200 patients and concluded that sinonasal disease is the most common cause for the persistence of ear symptoms in chronic otits media and supported by their improvement after treating the sinonasal pathology. They have emphasized that evaluation and management of sinuses is a must in all cases of chronic otitis media.

A Fujita, I Honjo, K.Kuzata has studied cases of refractory otitis media in 83 adolesents with 103 controls and they had concluded after evaluating the various parameters including the Eustachian tube function and found that 48% of the cases had refractive ear disease due to sinusitis and 78% had abnormal sinuses and concluded that in cases of chronic otitis media refractory to trieatment the main focus of pathology/infection is in sinuses.

In 1989 Bluestone and his collegues studied about 40 patients of chronic otitis media active mucosal type and found Eustachian tube dysfunction to be reason for the persistence of the disease. He concluded that diseases of the sinuses as the main cause rather than adenoid in adolescents and adults for Eustachian tube block.

M Miura and H Takashi in 1995 studied on the influence of upper respiratory infection including sinusitis on tubal compliance in children and adolescents with otitis media. They concluded that 72% of patient with refractory tubal compliance due to chronicity of upper respiratory infection including sinusitis leading to persistence of otitis media.

In an observation made by M.J. Lorenson in 2002,when persistent ear discharge is found, it is extremely important to rule out history of upper respiratory infection, colds and sinusitis.

A total of 60 patients were selected for this study,were treated and followed during the study period of June 2010 to Nov 2011 including 27 males and 33 females. In this study, we wanted to ascertain the role of sinusitis in the pathogenesis of Chronic Otitis Media Acitive mucosal type of disease. Even though other septic foci like chronic tonsillitis, adenoids exist, the percentage is insignificant in adults when compared to sinusitis.

Forty Four cases (73%) belonged to the lower socio-economic group,16 cases (26%) belonged to middle economic group and 2 ases (6%) belonged to the higher socio-economic group. Of the 60 cases,44 cases were from the rural region and 16 cases from the urban region.

In our study, the diagnostic nasal endoscopy was done for all patients. Of these, 40 patients (73%) had septal deviation/turbinoseptal deformity which was the most common anatomical variant, 37% had enlarged middle turbinate, 35% had medialised uncinate, 33% had enlarged bulla, 25% had enlarged bulla with prominent agger and 24% had paradoxical middle turbinate.

Accessory ostium was found in 37 patients. Of these 25 patients had the accessory ostium in the posterior fontanel and 18 patients had accessory ostium in the anterior fontanel.

All patients had discharge in meddle meatus. While the discharge was mucopurulent in 35 patients (58%), it was purulent in 18 patients (30%) and mucoid in 7 patients (12%) . In 80% of cases the discharge was seen below the Eustachian tube and in 20% of cases, the discharge was seen above Eustachian tube orifice.

On CT Scan Paranasal sinuses,majority of cases had Grade I disease (58%) i.e.minimal disease limited to Osteo Metal Complex followed by Grade II 22% i.e.moderate incomplete opacification of one or more sinuses,13% had Grade III-complete opacification of one or more major sinuses, not all and 4% of patients had Grade IV disease-total opacification of all sinuses.In 3% of Patients CT Scans PNS was normal.

The most common anatomic variant on CT scan was deviated nasal septum in patients (73%).Concha bullosa was found in 26 patients (37%).Medialised uncinate with maxillary mucosal thickening was found in 25 patients (36%).Enlarged bull narrowing OMC was seen 22 patients (35%).Prominent agger cell obstructing the frontal recess was found in 15 patients (25%).

All the patients had anatomic variant and signs strongly suggestive of chronic sinusitis on diagnostic nasal endoscopy and Computed Tomography scan of Paranasal Sinuses.

On otoendoscopy, 40 patients (74%) had a large central perforation, while 20 patients (26%) had a subtotal central perforation.

Middle ear mucosal status assessed by otoendoscopy, 40 patients had edematous Wet / Inflamed mucosa, while 20 patients had polypoidal (boggy) micosa. This indicates poor Eustachian tube function.

The incidence of unilateral and bilateral ear discharge in tha selected patients, it was found to be 18 (26%) and 42 (74%) respectively. When the incidence of unilateral and bilateral sinusitis was compared in these patients, it was found to ba identical. The patients with unilateral ear discharge had signs of chronic sinusitis and discharge around the Eustachian tube orifice of ipsilateral side only.

The patients underwent functional endoscopy sinus surgery by Stammberger technique for the treatment of chronic sinusitis. Patients with unilateral sinusitis underwent surgery only on the diease side. 43 (68%) patients also underwent septoplasy,

Following clearance of sinusitis, improvement in the middle ear mucosal status was assessed. Out of 40 patients with moist / wet and inflamed mucosa, 34 patients showed improved mucosal status while 6 patients had no improvements in mucosal status. Further treatment by way of regular antibiotic / betadine wash of the ear, suction cleaning and culture directed topical antibiotics improved the mucosal status of 2 more patients.

Out of 20 patients with boggy and polypoidal mucosa, 16 patients showed improved mucosal status after surgery alone, while 3 more patients had improved mucosal status with antibiotic and regular suction cleaning with culture directed topical antibiotics.

Out of 60 patients, 52 patients (87%) had improved middle ear mucosal status after clearance of sinusitis, while 8 patients (13%) showed no improvement at all in the middle ear mucosal status. These patients with improved middle ear mucosal status were further treated with cortical mastoidectomy or myringoplasty as the case may be with better outcome.

Out the 8 patients, who had no improvement of middle ear mucosal status were further investigated, three patients had hypo function of the Eustachian tube as demonstrated by the dye test and 5 patients had recurrence of sinusitis due to failure of the surgical procedure.

Conclussion:-

1. In the adult population sinusitis is the most important focal sepsis in case of persistent ear discharge in Chronic Otitis Media active mucosal type of disease.
2. A proper diagnostic nasal evaluation of all Chronic Otitis Media active mucosal type of patients is necessary in comprehensive management of the disease.
3. The clearance of sinusitis has improved middle ear mucosal status.
4. Unilateral ear discharge is associated with sinusitis only on the corresponding side, which is in concurrence with our study.
5. The clearance of sinusitis by functional endoscopic sinus surgery in Chronic Otitis Media active mucosal type of diseased patients results in good outcome of the middle ear disease clearance by further ear surgery.

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